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1 Enhancing software reliability with speculative threads
Jeffrey Oplinger, Monica S. Lam
October 2002 **Proceedings of the 10th international conference on Architectural support for programming languages and operating systems**, Volume 37 , 36 , 30 Issue 10 , 5 , 5
Full text available: pdf(1.47 MB) Additional Information: full citation, abstract, references, citings

This paper advocates the use of a monitor-and-recover programming paradigm to enhance the reliability of software, and proposes an architectural design that allows software and hardware to cooperate in making this paradigm more efficient and easier to program.We propose that programmers write monitoring functions assuming simple sequential execution semantics. Our architecture speeds up the computation by executing the monitoring functions speculatively in parallel with the main computation. For ...

2 Multithreading and value prediction: Speculative lock elision: enabling highly concurrent multithreaded execution
Ravi Rajwar, James R. Goodman
December 2001 **Proceedings of the 34th annual ACM/IEEE international symposium on Microarchitecture**
Full text available: pdf(1.37 MB) Publisher Site Additional Information: full citation, abstract, references, citings

Serialization of threads due to critical sections is a fundamental bottleneck to achieving high performance in multithreaded programs. Dynamically, such serialization may be unnecessary because these critical sections could have safely executed concurrently without locks. Current processors cannot fully exploit such parallelism because they do not have mechanisms to dynamically detect such false inter-thread dependences.We propose *Speculative Lock Elision (SLE)*, a novel micro-architectura ...

3 Toward efficient and robust software speculative parallelization on multiprocessors
Marcelo Cintra, Diego R. Llanos
June 2003 **ACM SIGPLAN Notices , Proceedings of the ninth ACM SIGPLAN symposium on Principles and practice of parallel programming**, Volume 38 Issue 10
Full text available: pdf(330.64 KB) Additional Information: full citation, abstract, references, index terms

With speculative parallelization, code sections that cannot be fully analyzed by the compiler are aggressively executed in parallel. Hardware schemes are fast but expensive and require modifications to the processors and memory system. Software schemes require no extra